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Scotch-Weld™ Structural adhesive primer EC-3909

Introduction

EC-3909 is a structural adhesive primer compatible with many epoxy or nitrile-phenolic based adhesive films. Among those for example AF 30, AF 3109-2 and AF500. The primer has been designed for improved adhesion to anodized aluminium. It offers the following advantages :

- Insures complete wetting of film adhesive to adherend surface.
- Protects surface treated metals and diminish strongly the rate of natural re-oxidation.
- Improves shear and peel performance, on both etched and anodized surfaces.
- Results in superior environmental performance.
- Simplifies production scheduling by protecting the cleaned surfaces until bonding operation can be completed.
- Primer can be co-cured with heat curing film or 1-part paste adhesives.

Description

(This is not a specification)

Consistency : Liquid
Net weight : 0.83 kg/litre
Solids content : 9.0 ± 0.5 %

Base : Modified epoxy resin
Solvent : Ketone-alcohol blend

Colour : Blue
Remark that colour has been modified. The reformulation of the primer (dye replacement) is due to toxicology issues.

Applications

Method	Surface coverage	Open time
Brush or spray	12-15 m^2/litre	14 days at 23 ± 2°C

Performance

Overlap shear performance using EC-3909 primer
Test method : EN2243-1 or ASTM D 1002
Adhesive film : Scotch-Weld™ AF 30 (cured 60 minutes at 175°C)
Substrate : Clad aluminium alloy 2024 T3
Surface treatement : FPL etching according to EN 2334

Condition	*Test Tempetature*	*Performance*
Initial	-55°C	26.1 MPa
Initial	+23°C	26.1 MPa
Initial	+80°C	17.8 MPa
Aged 1500h at 70°C, 85% RH	+23°C	29.7 MPa

Floating roller peel performance using EC-3909 primer
Test method : EN2243-1 or ASTM D 1002
Adhesive film : Scotch-Weld™ AF 3109-2K.85, AF500M.06 (cured 60 minutes at 125°C)
Substrate : Clad aluminium alloy 2024 T3
Surface treatement : FPL etching according to EN 2334
Test condition : Test performed on initial performance at +23°C

Film adhesive (initial performance)	*Performance*
AF3109-2K.95	219 N/25mm
AF500M.06	281 N/25mm

Surface preparation	The adherend surfaces must be dry, free from dust, oils and release agents, for optimal performance. When bonding metal structures, we recommend the following surface pretreatment :	
	Mechanical Abrasion :	Abrasion of the bonding surfaces with Scotch-Brite™ or with sandpaper P120 followed by a solvent degreasing with Methyl Ether Ketone solution.
	Chemical surface preparation of aluminium : (modified FPL etch)	1.) Degreasing with Methyl Ether Ketone 2.) 10 to 20 minutes immersion of alkaline degreasing 8% Oakite 164 solution at 85 ± 5°C 3.) Rinsing in tap water 4.) Sulfochormic immersion (10 minutes) at 70 ± 2°C 27.5% by weight of H_2SO_4 7.5% by weight of $Na_2Cr_2O_7$-$2H_2O$ 65.0% by weight of demineralized water 0.5 g/litre aluminium 1.5 g/litre of $CuSO_4$-$5H_2O$ 5.) Rinsing in tap water 6.) 15 minutes drying at 23 ± 2°C 7.) 10 minutes drying at 70 ± 2°C

Polymerisation	Room temperature cure Minimum 120 minutes at 20-25°C	Oven cure -	Combined cure -
Primer application	Apply primer so that the dried primer thickness is from 2 to 10 µm.		
Cleaning	Excess of non polymerised product can easily be cleaned with a solvent such as Methyl Ether Ketone. Polymerised product can only be taken off mechanically.		
Storage stability	A storage temperature of 4°C is recommended. Storage at higher temperatures shorten the shelf life of the product. Shelf life Maximum 6 months at 4°C	Flash point -6°C	
Precautionary Information	Refer to Product Label and Material Safety Data Sheet for health and security information before using the product. For additional health and safety information, please contact your local 3M Toxicological department.		
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Product Information source	3M European Technical Center, Aerospace Materials, France Phone : +33-1 30 40 26 51 or +33-1 30 40 26 59		
Issued by :	M. LÖFGREN	Approved by :	
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